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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,348	03/24/2004	Kosuke Takasaki	Q80473	5375
23373 7590 04/15/2009				
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WASHINGTON, DC 20037				
EXAMINER				
ISAAC, STANETTA D				
ART UNIT		PAPER NUMBER		
2812				
MAIL DATE		DELIVERY MODE		
04/15/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/807,348

Applicant(s)

TAKASAKI ET AL.

Examiner

STANETTA D. ISAAC

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the Appeal Brief and Status Inquiry filed on 10/31/07 and 1/23/09, respectively. Claims 1-16 and 23 are pending.

In view of the Appeal Brief filed on 10/31/07, PROSECUTION IS HEREBY REOPENED. A new grounds of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Charles D. Garber/  
Supervisory Patent Examiner, Art Unit 2812

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misawa (US PGPub 2004/0016983, hereinafter referred to as "Misawa") in view of Shimoda et al (US Patent 6,887,650, hereinafter referred to as "Shimoda").

Misawa discloses the semiconductor method substantially as claimed. See figures 1-10d with emphasis on figures 8a-9c, and corresponding text where, Misawa shows, pertaining to claim 1, a method for manufacturing a solid-state imaging device by adhering a transparent substrate, in which a plurality of frame-shaped spacers are formed, via an adhesive to a wafer on which plural solid-state imaging elements are formed, and by dividing the transparent substrate and the wafer for each solid-state imaging element, each of the solid-state imaging elements of the wafer being surrounded by each of the plurality of spacers, the method comprising the steps of: the adhesive 207 is applied to the plurality of spacers 203S formed on the transparent substrate 201 (figures 8b-8d; [0072-0074]); applying pressure to the transparent substrate, which is adhered to the plurality of spacers formed on the transparent substrate (figure 9b; [0077]). In addition, Misawa shows, pertaining to claim 10, further

comprising the step of carrying out surface modification to the surface of the spacer to which the adhesive is applied ([0075]). Also, Misawa shows, pertaining to claim 16, wherein the spacer is bonded to the wafer over the surface to which the adhesive is applied (figure 8b; [0073-0074]).

However, Misawa fails to show, pertaining to claim 1, adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate. In addition, Misawa fails to show, pertaining to claims 2 and 3, wherein the transfer member is a rigid body such as a glass plate. Also, Misawa fails to show, pertaining to claims 4 and 5, wherein the transfer member is an elastic body such as a flexible plastic film. Misawa fails to show, pertaining to claim 6, wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant. In addition, Misawa fails to show, pertaining to claim 7, further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate. Also, Misawa fails to show, pertaining to claim 8, further comprising the step of applying a release agent on the surface of the transfer member. Misawa fails to show, pertaining to claim 9, wherein the release agent is silicon. In addition, Misawa fails to show, pertaining to claim 12, wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin coating. Also, Misawa fails to show, pertaining to claim 13, wherein pressure is applied to the transfer

member and the transparent substrate by air pressure or roller pressure. Finally, Misawa fails to show, pertaining to claim 23, further comprising the step of bonding the wafer to the transparent substrate by pressing the wafer and the plurality of spacers formed on the transparent substrate, wherein the adhesive transferred from the transfer member onto the plurality of spacers bonds the plurality of spacers to the wafer.

Shimoda teaches, in figures 1-42, with emphasis on figures 15 and 20A-20D and corresponding text, a similar method of manufacturing a semiconductor device where an peeling layer (adhesive material) is formed on a transfer destination substrate (col. 43, lines 45-67).

It would have been obvious to one of ordinary skill in the art to substitute, the following steps of: adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate; wherein the transfer member is a rigid body such as a glass plate; wherein the transfer member is an elastic body such as a flexible plastic film; wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant; further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate; further comprising the step of applying a release agent on the surface of the transfer member; wherein the release agent is silicon; wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin

coating; wherein pressure is applied to the transfer member and the transparent substrate by air pressure or roller pressure; further comprising the step of bonding the wafer to the transparent substrate by pressing the wafer and the plurality of spacers formed on the transparent substrate, wherein the adhesive transferred from the transfer member onto the plurality of spacers bonds the plurality of spacers to the wafer, in the method of Misawa, pertaining to claims 1-9, 12, 13 and 23, according to the teachings of Shimoda, with the motivation that, a transfer member, as taught by Shimoda, can be included in the formation of the adhesive layer on the spacers. In addition, both Misawa and Shimoda teach bonding the transparent substrate and a wafer substrate by using spacers that have an adhesive material formed thereon. Therefore, transferring the adhesive on the spacers that includes a transfer member would prove to be equivalent, since the ultimate goal would be to form an adhesive material onto the spacers, for the purpose of later bonding the transparent substrate and the wafer substrate together.

It would have been obvious to one of ordinary skill in the art to incorporate, the following steps of: wherein the viscosity of the adhesive is 0.1 Pa S or more when the adhesive is applied to the transfer member; wherein the viscosity of the adhesive is 100 Pa S when the adhesive is transferred to the spacer from the transfer member; wherein the adhesive has the thickness from 0.5  $\mu\text{m}$  to 5.0  $\mu\text{m}$  after the adhesive is activated, in the method of Misawa, pertaining to claims 11, 14 and 15, according to the combined teachings of Misawa in view of Shimoda, with the motivation that Misawa in view of Shimoda teach the formation of an adhesive layer formed on spacers. In addition, given the teachings of the references, it would have been obvious to determine the

optimum thickness, temperature as well as condition of delivery of the layers involved, thus having the above viscosities and thickness would result in routine experimentation. (See *In re Aller*, *Lancey and Hall* (10 USPQ 233-237))

#### ***Response to Arguments***

4. Applicant's arguments, see Appeal Brief, filed 10/31/07, with respect to the rejection(s) of claim(s) 1-16 and 23 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Misawa US PGPub 2004/0016983.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STANETTA D. ISAAC whose telephone number is (571)272-1671. The examiner can normally be reached on Monday-Friday 9:30am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Garber can be reached on 571-272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stanetta Isaac  
Patent Examiner  
April 11, 2009

/Charles D. Garber/  
Supervisory Patent Examiner, Art Unit 2812